Wisconsin
Department of Commerce

Environmental & Regulatory Services Division
Bureau of Storage Tank Regulation
201 West Washington Avenue
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin COMM 10 Material Approval

Equipment   Leak detection monitoring panel **DMS-574-A2** with liquid level control sensors, **DLP-1-NC; DLP-2-NC; DLP-2-NO** and leak detection monitoring panel **TA-732A0** with liquid level sensors, **DWP-25; DFP-25**.

Manufacturer Gems Sensors / Warrick Controls Inc.
1 Cowles Rd
Plainville, CT 06062

Expiration of Approval: December 31, 2005

SCOPE OF EVALUATION

The Leak Detection Monitoring Panel **DMS-574-A2** with Liquid Level Control Sensors, **DLP-1-NC; DLP-2-NC; DLP-2-NO**,and the Leak Detection Monitoring Panel **TA-732A0** with **DWP-25; DFP-25** Liquid Level Sensors, manufactured by Gems Sensors / Warrick Controls Inc. have been evaluated for conformance with the current edition of the Wisconsin Flammable and Combustible Liquids Code, Chapter **COMM 10.61.** The equipment is approved for use in the State of Wisconsin, subject to the limitations below.

DESCRIPTION AND USE

The **DMS** Series Leak Detection Systems are used for above and underground storage tank applications. The **DMS-574-A2** monitoring panel is designed for use with liquid level sensor models DLP-1-NC, DLP-2-NC, and DLP-2-NO. Applications included for the sensors are the monitoring of a dry interstitial space in a double-wall steel tank and the monitoring of a dry sump area.

DLP series are designed to detect the presence of liquids. A signal shall be sent to the monitoring panel and activates an audible alarm when the liquid raises the sensors' float to its detection level. This sensor is for the dry area use, which contain liquid only. Based on the application and the operation, selection can be normally open (NO) or normally closed (NC) using the proper DLP version of DLP-1 and DLP-2 sensor assemblies. The float in the sensor activates a reed switch which can be positioned either open or closed depending on the application. DLP-1 is designed to fit 1.5 inch and DLP-2 is designed to fit 2.00 inches standard piping.

The **TA-732A0** monitoring panel is designed for use with liquid level sensor models DWP-25 and DFP-25. An audible alarm will be activated when the appropriate sensor contact changes state (Fault condition), and the appropriate red LED will light. When acknowledge pushbutton is pressed, the audible alarm will stop. However, the alarm LED will remain lit as long as the fault condition exists.

The DWP-25 sensor is a conductance probe that is used for the detection of water only. The hydrocarbon products do not activate this sensor.

The DFP-25 sensor is used for the detection of hydrocarbon products only. Hydrocarbon sensitive wax located at the end of the sensor shall be dissolved at contact with Hydrocarbon products which releases a spring switch that activate an alarm. This sensor must be replaced after it has alarmed. Since water can not dissolve the wax, this sensor will not detect water.

TESTS AND RESULTS

The detection DMS-574-A2 system was evaluated by the Ken Wilcox Associates, Inc. using test procedures described in the standard test protocol "Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of liquid Level Sensors" which were based on the procedures in the EPA Protocol.

The detection TA-732A0 system was evaluated by the Ken Wilcox Associates, Inc. using test procedures described in the standard test protocol "Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of liquid Level Sensors". The results are contained in the Lab report for the Alternative EPA Evaluation forms. Both systems were tested using water, Gasoline and Diesel.

The following parameters were determaind to be:

Threshold (Lower Detection Limit): The smallest product thickness that the detector can reliably detect.

Precision (standard deviation): Agreement between multiple measurements of the same product level.

Detection Time: Amount of time the detector must be exposed to product before it responds.

Fall Time: Amount of time before the detector stops responding after being removed from the product.

Specificity: Types of products that the sensor will respond to.

The test results for **DLP-1-NC** monitored by the DMS-574-A2 using water, Gasoline or Diesel shows below in respective order as follows:

- Thresholds   (inches)   : 1.26,   1.39,   1.32.
- Precision   (inches)   : 0.004,   0.004,   0.003.
- Detection Time (seconds)   : <1,   <1,   <1.
- Fall Time   (seconds)   : <1,   <1,   <1.

The test results for **DLP-2-NC** monitored by the DMS-574-A2 using water, Gasoline or Diesel shows below in spective order as follows:

- Thresholds   (inches)   : 1.43,   1.54,   1.50.
- Precision   (inches)   : 0.007,   0.003,   0.004.
- Detection Time (seconds)   : <1,   <1,   <1.
- Fall Time   (seconds)   : <1,   <1,   <1.

The test results for **DLP-2-NO** monitored by the DMS-574-A2 using water, Gasoline or Diesel shows below in spective order as follows:

- Thresholds   (inches)   : 1.40,   1.52,   1.49.
- Precision   (inches)   : 0.003,   0.003,   0.005.
- Detection Time (seconds)   : <1,   <1,   <1.
- Fall Time   (seconds)   : <1,   <1,   <1.

Specificity: These sensors will respond once its threshold have been exceeded.

The test results for **DWP-25** monitored by the TA-732A0 using Gasoline, water or Diesel shows below in respective order as follows:

- Thresholds   (inches)   : N / A,   0.70,   N / A.
- Precision   (inches)   : N / A,   0.0084,   N / A.
- Detection Time (seconds)   : N / A,   0.00:01,   N / A.

- Fall Time (seconds) : N / A, 0.00:01, N / A.

Specificity: This sensor will respond to water only.

The test results for **DFP-25** monitored by the TA-732A0 using Gasoline, water or Diesel shows below in respective order as follows:

- Thresholds (inches) : 1.0, N / A, 1.0.
- Precision (inches) : N / A, N / A, N / A.
- Detection Time (seconds) : 00:06:50, N / A, 4:14.40.
- Fall Time (seconds) : N / A, N / A, N / A.

Specificity: This sensor will respond to any product capable of dissolving the Hydrocarbon sensitive wax contained within the sensor.

LIMITATIONS / CONDITIONS APPROVAL

All installation, testing and maintenance shall be performed in accordance with the manufacturer's recommendations and all applicable codes. In addition, a qualified technician shall conduct all necessary maintenance and calibration procedures as recommended by the manufacturer to assure continued and proper operation of the system. Leak detection system maintenance must be conducted annually by a qualified technician and the respective documents maintained on site.

This approval will be valid through December 31, 2005, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Reviewed by: _____
             Ahmed Ghalib,
             Code Consultant

Approval Date: _____

Approved by: _____